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REMARKS

1-2 FYI

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Tom: TDC.
Call [redacted] and make sure he knows ~~that~~ this has been approved.
M

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Declass Review by NIMA/DOD

IP FM 30 (12-69) - OBSOLETE PREVIOUS EDITIONS

PPB 70-0699 File: K. N. [illegible]

DDI-10247

Executive Registry
70-1950

NPIC/D-89-70
3 APR 1970

MEMORANDUM FOR: Deputy Director of Central Intelligence

THROUGH : Executive Director-Comptroller
Director, Office of Planning, Programming & Budgeting
Assistant Deputy Director for Intelligence

SUBJECT : Request for Approval of a Contract with the [redacted] for the Fabrication of a 10" x 10" Stage Stereocomparator for [redacted] from FY-1970 R&D Funding

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1. This memorandum requests approval for the commitment of R&D funds for a contract. The specific request is stated in Paragraph 7.

2. As reconnaissance photography for intelligence purposes has improved in quality, requirements for extracting highly accurate measurements from the photo imagery have become considerably more demanding. Requirements for height measurements, slope distances, and other three-dimensional data have been added to the earlier requirements for acquiring simple, two-dimensional ground distances. In order to obtain these accurate, three-dimensional measurements, stereo photographs must be measured on an instrument called a stereocomparator. The X and Y Cartesian coordinates of the two images making up the stereo pair are measured on both photographs simultaneously--while they are both being viewed stereoscopically. These X and Y Cartesian coordinates are then processed through a computer program to produce both rectified ground dimensions and vertical heights. The Photogrammetry Division, IEG/NPIC, tasked with the requirement to perform mensuration, currently utilizes 10 comparators, only one of which is a true stereo measuring instrument; i.e., measurement capability on both stages. Stereo mensuration requirements, however, make up 20% of the present workload and within a year are expected to make up as much as 50% of a considerably increased workload. The High Precision Stereocomparator (HPSC), which is presently under development, will help in the mensuration of a portion of these stereo tasks, but it is only one instrument, and its complexity--combined with the training required to operate it--prevents it from being used by more than a few photogrammetrists. The HPSC, with its high accuracy measuring system and high performance optical train, is best suited to handling ultrahigh precision stereo mensuration tasks and very difficult jobs--it will be utilized full time on these. The Photogram-

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metry Division still has a requirement for a "workhorse" stereocomparator which will be able to handle the normal, day-to-day workload which is now being performed exclusively by the only stereo measuring instrument available, the Stereoscopic Point Transfer Device.

3. The proposed one-year development program is to design and fabricate a stereocomparator capable of handling stereo pairs of imagery in formats up to 10" x 10". This comparator will be as simple as possible in mechanical design, but will still produce coordinate measurements to a precision of 2 micrometers (microns) or better. This design approach, utilizing a straightforward "lead-screw" measuring system and solid state electronic circuitry, has amassed an impressive history of high reliability. High reliability is essential for the intended application. The viewing system will provide a magnification range of 13X to 120X and be capable of resolving 600 line pairs per millimeter. Provisions will be made to introduce filters into the illumination system to optimize the instrument for use with color imagery. The instrument will be capable of measuring (on-line with the central computer) approximately 80% of the three-dimensional measurement requirements in the Photogrammetry Division. The 10" x 10" Stage Stereocomparator is basically a scaled-up version of the 6" x 6" Twin Stage PI Comparator recently developed for the Imagery Analysis Service, DDI. The only area of any technical risk is the optical train which must be extended in length to accommodate the larger format of the 10" x 10" Stereocomparator. No other problem areas are apparent.

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4. [redacted] was selected as a sole source to perform this task because of the direct relationship between this development and their previous development of the smaller format Twin Stage PI Comparator.

5. It is presently anticipated that successful completion of this development contract will result in the procurement of two additional 10" x 10" Stereocomparators by the Photogrammetry Division, IEG/NPIC, (one in FY-72 and one in FY-73) to handle the expected increase in stereo mensuration requirements. The estimated price for each follow-on instrument is [redacted]

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6. The [redacted] is appropriate for this contract; the work will be UNCLASSIFIED.

SUBJECT: Request for Approval of a Contract with the [redacted] 25X1
25X1 [redacted] for the Fabrication of a 10" x 10" Stage Stereo-
25X1 comparator for [redacted] from FY-1970 R&D Funding

7. It is requested that approval be granted to negotiate a con-
25X1 tract with the [redacted] at a cost not to exceed [redacted] 25X1

[redacted] 25X1

ARTHUR C. LUNDAHL
Director
National Photographic Interpretation Center

Attachments:
1. Proposal
2. Form 2420

25X1

CONCUR: [redacted] 14 APR 1970
Assistant Deputy Director for Intelligence — Date

/s/ L. K. White 21 APR 1970
APPROVED: _____
Deputy Director ~~of Central~~ Intelligence — Date
EX DIR-Compt

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